Developmental Stages in Advanced SLA:
A Corpus-Based Analysis of Academic Writing by ESL Graduate Students

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Abstract

Second Language Acquisition (SLA) researchers have yet to map the developmental stages language learners go through as they approach the target language. In studies of English as a Second Language (ESL) writing, the term "advanced learner" has been applied indiscriminately to learners ranging from freshman ESL composition to graduate students. There is a need to examine the advanced stages of SLA in order to refine SLA theories and pedagogical approaches.

A corpus of texts written by non-native English-speaking doctoral students in applied linguistics from several linguistic backgrounds was analyzed to determine the texts' lexical, morphological and syntactic fluency, accuracy and complexity. A sub-corpus of papers by native-English-speaking peers was used for comparison. The texts were strictly-timed and loosely-timed exams written 2 to 3 years apart. Surveys and interviews were also conducted.

Based on findings, the study defines data-based criteria that distinguish four quantitatively and qualitatively distinct developmental stages: the advanced, highly advanced, near-native, and native-like stages. Advanced learners make more frequent and varied errors which can be explained by transfer from the first language. Native-like writers make few errors that can be explained by overgeneralization of conventions from informal English and working memory limitations (similar to native speakers' errors).

The study suggests that SLA is a process of transfer followed by relearning of morpho-syntactic specifications (Herschensohn, 1999), with syntax being used with the greatest accuracy (Bardovi-Harlig & Bofman, 1989) and lexicon with the least. The relationships between accuracy and other social and cognitive factors are considered, and pedagogical recommendations are made.

Developmental Stages in Advanced SLA: A Corpus-Based Analysis of Academic Writing by ESL Graduate Students

The existing English as a Second Language (ESL) writing literature can be commended for numerous achievements, but not for defining the advanced second language (L2) writer based on developmental stages encapsulated within this ill-defined stage. Most studies operationalize the concept of "advanced" learner/writer loosely, including under this term writers as diverse as ESL freshman composition students, graduate students, and non-native-English-speaking faculty, each with various experiences, lengths of English studies or stay in English-speaking countries. Often the criteria for assigning advanced status to an ESL writer are a TOEFL score higher than 500 and/or academic placement. It will be impossible to distinguish the accomplishments and difficulties of highly advanced learners from those of a lower level as long as studies treat all as one population. This may misguide the way advanced (written) language is perceived, taught, and assessed.

In addition, SLA research needs to explain the end stages of SLA acquisition as well as the beginning, considering different language production conditions and media. As Cobb (2003) also notes, "An IL [Interlanguage; Selinker, 1972] framework has been useful in understanding early second language (L2) acquisition (e.g., Dulay & Burt, 1974) but has contributed less to understanding the continuing development of intermediate and advanced learners. … IL analysis of later acquisition revolves around the concept of fossilization, a notion only slightly more illuminating than *error*" (p. 394). Understanding the late stages of SLA can help theorists and practitioners create complete pedagogical and cognitive models of SLA.

Literature Review

The existing ESL writing literature identifies a substantial range of linguistic difficulties faced by generically defined "advanced" ESL writers. Several categories of studies found shortcomings in the syntactic, morphological, semantic and rhetorical features of ESL texts.

Accuracy, fluency and complexity studies analyze the errors found in texts (accuracy studies), the length of the materials (fluency studies), the sophistication of their vocabulary, syntax, or rhetorical expression (complexity studies), or combinations of these. Some studies compare the writing of groups of native (NSs) and non-native speakers (NNSs) of English (Hinkel, 1997, 2003), while others include only NNSs (Bardovi-Harlig & Bofman, 1989; Connor & Mayberry, 1996; Master, 1995). Such ESL writing studies propose that so-called advanced learners may not master a fairly large number of forms, including articles, specific verb types and forms, anaphoric expressions and agreement, prepositions, lexical choice and subordination. For example, Hinkel (1997) and Hinkel (2003) found that NSs employed a larger amount and variety of lexical and syntactic constructions, including activity and causative verbs, and significantly more *it*-cleft constructions, public, private, and expecting verbs, and predicative adjectives, while the NNSs also used tenses inconsistently. Bardovi-Harlig and Bofman's (1989)

NNSs produced the greatest number of errors with grammatical morphemes, fewer errors in lexical choice, and the smallest number of errors in syntax (p.24). The omission of plural markers and articles, complement embedding and constituent omission problems occurred most frequently in their respective categories. Connor and Mayberry (1996) discovered errors in the areas of lexical choice (25%), articles (23%), syntactic structure (19%), prepositions (3%), and verb tense/agreement (2%). Master (1995) also found an abundance of article use errors in the writing of 19 Asian graduate students in an ESL MA program.

Process studies (Cumming, 1990; Zamel, 1983) highlight undergraduate ESL students' problems with articles, agreement, and usage, and the use of the L1 in thinking episodes related to word choice. Zamel (1983) worked with six sophomore and junior university ESL learners from various linguistic backgrounds who had completed the freshman composition requirement in the U.S. Cumming (1990) analyzed concurrent verbal reports obtained from 23 intermediate and advanced English learners in an Intensive English Program in Ontario while the subjects were composing an informal letter and an argument. Both studies suggest that writers' focus on content may be a reason why some errors may reoccur, and support the above mentioned studies' observations on learners' relative easiness with syntax and morphology rather than lexicon. Cumming (1990) noted that L1 accessing occurred as "Cross-linguistic comparisons … appeared in 5% to 58% of the total number of decisions that participants made about their writing" (p. 493). However, the fact that some of the best writers retained inaccuracies even after revising and editing shows that some forms resist acquisition after many years of study for other linguistic and cognitive reasons.

Corpus-based collocation studies (Altenberg, 1998; Granger, 1998; Howarth, 1998; Hunston & Francis, 2000; Kennedy, 2003; Liu, 2003) indicate that a definite feature of non-nativeness in advanced ESL and EFL writing is the non-normative use of prefabricated patterns. Cobb (2003) supports this in replication studies that show that as ESL writers' proficiency increases, their language begins to resemble that of native speakers but still displays over-reliance on non-academic vocabulary and a limited lexicon. Learners' perceived massive L1 transfer, difficulty with collocations and insufficient L2 lexicon are identified in *advanced learner reflections* by colleagues in SLA (Canagarajah, 2001; Flowerdew, 1999; Liu, 2001; Ringbom, 2001).

The studies reviewed furnish inventories in which the error types and especially their rankings vary. Notions such as "high-intermediate learner" or "advanced learner" or "TOEFL score over 500" correlate with a considerable number of problematic forms, and thus constitute unreliable representations of advanced SLA stages. The use of TOEFL scores, or length of stay, or academic standing as criteria for advancedness in SLA has yielded a discouraging picture. In addition, the errors are explained quite differently. Hinkel (1997, 2003) and Master (1995) make a case for linguistic transfer and invoke the learners' lack of familiarity with the speech community. Bardovi-Harlig and Bofman (1989) support a strong syntax - weak morphology stage (proposed by Newport, Gleitman & Gleitman, 1977), in which learners have more difficulties acquiring the SL morphology than the syntax because morphology is language-specific to a greater extent. Cumming (1990) and Zamel (1983) emphasize the role of attention and motivation, while collocation studies and learner reflections present the lexicon as the source of most

difficulty. The variation in terminology, findings, and interpretations signals a need for further focused research.

Research Questions

Considering the wide and seemingly unsystematic range of challenges faced by advanced ESL writers, and that most studies define the advanced ESL writer based on limited criteria as mentioned above, the need arises to refine definitions and distinguish systematic developmental stages that would allow us to better understand SLA at an advanced stage and to better cater to advanced learners' needs through research-informed pedagogical applications. The aim of this study is to answer the following questions:

- What are the developmental stages comprised within the general term of "advanced ESL writers" and what are the differences and similarities among them?
- What are some linguistic challenges that the advanced writer ceases to struggle with and what are the linguistic features that continue to pose problems even for a near-native L2 writer?

Bearing in mind that previous studies operationalized advancedness intuitively rather than empirically, the main hypothesis is that not all the previously found error types and frequencies will be confirmed by this study on graduate ESL writers. Most non-target usages at the most advanced stages may be *mistakes,* or occasional slips, rather than *errors*, defined by Corder (1967) as stable or systematic parts of one's linguistic system reflecting lack of knowledge (in Ellis, 1994, p.51). The role of linguistic interference may diminish as the language learner becomes more autonomous, and those with the most exposure and motivation may continue to have the highest accuracy rates (as predicted by Cumming, 1990; Hinkel 1997, 2003; Master, 1995 regarding exposure; and Dörnyei and Durow, 2004 regarding exposure and motivation).

The questions will be answered by analyzing the lexical, morphological, and syntactic accuracy of texts written by graduate students in applied linguistics. The fluency and complexity of these texts were analyzed elsewhere (Ene, 2006), but they will be excluded from the current account due to space limitations. Learner characteristics that play a potential role in one's ability to write as well as a NS counterpart, also analyzed in Ene (2006), will be mentioned when relevant.

Data Collection

Written data were collected from graduate students in a Ph.D. program in applied linguistics in the U.S. At the beginning of the second semester in the Ph.D. program, each participant completed three two-hour sit-down/strictly-timed qualifying exams (SDQs) in the form of short answers and essays on given topics from applied linguistics, and one 10-page take-home/loosely-timed qualifying exam (THQ) (a critical review of an article). In their third year of studies, the participants completed their comprehensive exams (Comp) consisting of three or four 10-20-page papers on self-selected topics. Both qualifying and comprehensive papers were solicited in order to obtain a longitudinal view. Papers were available from eleven NNSs from the following L1s: Chinese (3), Spanish (3), German (2), a Slavic language (1), a Southeast Asian language (1), and two

African L1s (1). The languages spoken by a sole representative cannot be disclosed in order to protect the participants' identity. Comps were not available from one Chinese, one German, and one Spanish-speaking student, leaving us with Comp data from eight NNSs. In the longitudinal design of this study, therefore, there are a strictly timed condition (SDQ) and a loosely timed condition (THQ) constituting Time One (the qualifying exams or Q), and another loosely timed condition – Comp – constituting Time Two.

SDQs, THQs, and Comps were collected from seven native-English speakers for the purpose of comparing the NSs' and NNSs' performance. The texts make up a corpus of over 292 000 words, distributed about equally between NSs and NNSs (see Table 1).

Table 1

The participants have the following pseudonyms: Lee, Mao, and Yang (Chinese); Rosa, Maria, and Maya (Spanish); Heidi and Hans (German); Katia (Slavic L1); Phara (Southeast Asian L1); and Mohammed (African L1).

Ethnographic data about the NNSs come from background questionnaires and face-to-face recorded interviews. These probed NNS characteristics believed to be potentially relevant to late SLA: age, L1, motivation, test scores, teaching and learning experiences, language learning philosophy, length of studies, length of stay in an English-speaking country, and other characteristics that emerged during the interviews.

The corpus and ethnographic data allowed both quantitative and qualitative analyses that are most adequate for exploratory research in underdeveloped areas of SLA. The data also have the merit of being naturalistic and longitudinal and of representing both loosely and strictly-timed conditions.

Data Analysis

The researcher read the texts and annotated them by entering error codes electronically. Error codes were both inspired by the literature and created based on occurrences in the texts. The intrarater reliability coefficient was calculated based on two coding sessions, three months apart, of a sample of six texts by participants from three L1s (Chinese, German, and Spanish). The reliability coefficient was 98%. The interrater reliability coefficient between three NS raters and the researcher was 91%. The raters coded the same blinded sample and used a coding sheet supplied by the researcher.

An error was operationalized as any deviation from prescriptive rules of usage. The errors were categorized as lexical, morphological, or syntactic. The coding sheet is provided as an Appendix. Any single word, whether content or function, was viewed as a lexical item represented in the mental lexicon. Word substitutions, meaning approximations, word omissions and insertions were categorized as lexical errors.

The omission, substitution, or incorrect insertion of a derivational or inflectional morpheme were categorized as morphological errors. Morphological and lexical error frequencies (EFs) were calculated based on the total number of words or total number of words from the same part of speech or morpheme, depending on the purpose of the analysis.

Syntactic errors include agreement, anaphora, word/constituent order, the omission or insertion of multi-word phrases or copulative verbs, the omission of the subject noun or pronoun, the omission of a verb (fragments), inconsistent sequence of tenses. As syntactic relations often expand over single word boundaries, syntactic EFs were calculated as number of syntactic errors divided by number of clauses, or clausal units (C-units), which capture the amount of subordination in a text more accurately than T-units (see Wolfe-Quintero, Inagaki, and Kim, 1998).

The parts of speech (POS) in the texts were tagged automatically. Word frequencies were found by uploading the tagged files into the concordancing program MonoConc Pro (Athelstan, 2002). The concordancer made it possible to analyze the original contexts of various errors with the help of KWICs (Key Word in Context).

Results

The overall linguistic accuracy of the corpus texts was impressively high. Figure 1 represents the number of errors of various types found in the number of C-units identified in the texts. For better graphic visualization and ease of discussion, the calculations here were normed by 100.

Phara accumulated the highest AEF (average EF). The speakers of Chinese clustered in the second highest place, while Heidi, Maria, and Maya came closest to the NSs. The NSs' group average was 0.48.

Figure 1

Lexical EF was consistently the highest in the NNSs' and NSs' SDQ, THQ, and Comp. A *t* test revealed that only the difference between the groups' lexical AEF was significant ($p = 0.025$, $df = 4$). Due to the limited number of participants, the power of the test (0.711) was below the desired power of 0.800, and results should be interpreted cautiously (here and throughout the analysis). Morphological EF was only slightly higher than syntactic EF in the NNSs' work. The difference between the groups' morphological and syntactic EF did not reach statistical significance.

Figure 2

In the following sections, the two to three most frequent errors will be discussed regardless of actual frequency or statistical significance, based on the consideration that a smaller corpus is best used when analyzed quantitatively and qualitatively.

Lexical Accuracy

As a group, the NNSs achieved an improved lexical accuracy in THQ compared with SDQ, and in Comp compared with SDQ/THQ. A paired *t* test revealed that NNSs' drop in lexical EF from SDQ to THQ was not significant ($p = 0.07$), but the drop from the EF in SDQ/THQ to that Comp was significant ($p = 0.001$, $df = 10$, power of test = .9).

The highest average lexical EFs were obtained by Phara (1.69% / total words or 17.90 / C-units), Lee (1.38% or 11.57, respectively), and Mao (1.11% or 8.59); the lowest

was obtained by Heidi (0.24% or 1.9), Maria (0.19% or 1.68), and Maya (0.15% or 0.12). The lowest average lexical EF was higher than that of the NSs (0.02% or 0.48).

Figure 3

The time allowed by THQ helped nine of the eleven NNSs perform more accurately or the same. Lee's and Maya's lexical accuracy decreased in THQ, but Mao's and Maria's remained the same while all others improved in THQ. In Comp, Phara and Heidi had a higher EF than in THQ, but all the other NNSs improved over SDQ/THQ. Therefore, lexical acquisition continued over time and even reached NS level for some (Maria and Maya).

There is a telling quantitative difference between the errors made by the NNSs and the NSs (Table 2), and also a qualitative one, in that the NNSs' most frequent lexical errors involved function words, while for the NSs they involved content words. This difference will be interpreted in the *Discussion* section.

The NNSs' had higher EFs for all POS than the NSs. At Time One, the POS that occurred in the most frequent errors are articles, followed at some distance by prepositions, nouns, and others (Table 2). A *t* test showed that the difference between the frequency of article errors and that of preposition errors at both Time One and Time Two was statistically significant ($p = 0.025$, $df = 4$, power of test = 0.711).

Table 2

Articles. The dominant article error was the same for all NNSs – article omission, although some omitted definite articles more frequently and others, indefinite articles. In decreasing order, Phara, Mao, Lee, Yang, and Katia made the most frequent article errors. Their dominant error type, article omission, can easily be related to the absence of an article system in their L1s (Southeast Asian, Chinese, and Slavic).

Example 1:

> *They are <A> learner-centered French class and <A> teacher-centered Italian class. The researcher found that in <THE> learner-centered French class, the teacher scaffolded the students by using collaborative dialogue as a mediational tool to lead students to problem solving.* (Phara, indefinite and definite article omission, THQ)

Example 2:

> *Interlanguage reflects the developmental order of* the *L2 acquisition and contains various errors, such as borrowings from the L1 (L1 transfer), overgeneralization of the L2 forms, etc.* (Katia, definite article insertion, SDQ)

Maya, Maria, Hans, and Heidi made article errors least frequently. All four are speakers of European languages which use articles as well. Because the article usage rules may not map exactly in their L1 and L2 (since languages deal differently with issues of definiteness and countability), some errors still occurred.

When calculated based on the total words from the same POS, EFs more clearly show how problematic a POS was. For instance, in Phara's SDQ, 21.11% of all articles were used incorrectly; in THQ, 5.3%; and in Comp, 8.88%. Mao, Lee, Yang, and Katia, performed similarly to Phara. For those who made article errors least frequently, the error rates gravitated around 2% and lower. The highest EF for prepositions was around 3% and the lowest below 1%.

The POS most frequently involved in lexical errors for the NSs was the noun. In most cases, errors were substitutions or inelegant uses of synonyms, which are more lexico-semantic than the article- and preposition-related errors and suggest that they were due to episodes of inattention brought about by the stress of the examination.

Example 3: *A required requirement is to pass the exam.* (repetition)
Example 4: *This is an explicative explanation*. (repetition)
Example 5: *Strategies are things learners do*. (vagueness)

Error rates as low as the ones in the NSs' Comp suggest that knowledge of the respective lexical items might have little to do with the errors found. They were probably typos or temporary episodes of inattention. The NNSs' errors, however, were systematic throughout the timeline and conditions covered in the study.

Prepositions. Phara, Heidi, Mao, and Lee were the NNSs who made errors in preposition usage most often. Maria and Maya accrued the lowest preposition EF. The other participants' ranking varied across the three exams. The NSs' preposition EF was 0.01% for SDQ and 0.00% for THQ and Comp. Hans recorded a 0.00% frequency in SDQ; Rosa, and Mohammed matched the NSs in THQ; Maya and Katia did it in Comp.

Most of the preposition misuses occurred with nouns or verbs that could associate with different prepositions (*distinction of/from/between*, *plan to/about/on, lack in/of, request to/for, fall on/in/for*). Sometimes a preposition was substituted with one used with another part of speech (*compete/competition to/with, research on/researchers in*). Few errors were associated with fixed collocations such as *with respect to* and *in its own right*, but the latter occurred as *on its own right* in the writing of NNSs from several L1s. Some reporting verbs (*complain, mention, report*) co-occurred with the incorrect preposition or without the required one.

Example 6:
The author mentions about English grammar textbook as one factor that affect English learners' learning about English passive construction. (Phara, preposition insertion, THQ)
Example 7:
The stress falls for the fourth syllable. (Lee, preposition substitution, Comp)
Example 8:
Labov asked what items could be bought in the fourth floor. (Maria, preposition substitution, SDQ)

Morphological Accuracy

The average morphological EF in Comp was lower than in THQ and SDQ, but not significantly so (a paired *t*-test yielded a $p = 0.07$, $df = 4$, power of test = .711). Morphological accuracy improved significantly from the NNSs' SDQ to THQ ($p = 0.014$, $df = 4$, power of test = .711). This suggests that SLA continued in time, though the time available for THQ had a greater impact on morphological performance than the years between THQ and Comp.

Figure 4

Yang and Maya had a higher EF in THQ than in SDQ, but everyone else seemed to have benefited from the more generous time conditions of the THQ. In Comp, Heidi was the only one who accumulated a higher morphological EF than in THQ. Lee and Mao stagnated since THQ. Everyone else improved morphologically, including the NSs, and three NNSs performed as accurately as the NSs: Katia, Maria, and Maya. Hans performed like the NSs in THQ. The highest morphological EFs were recorded for Phara, Lee, and Mao, in a similar pattern to that of the lexical EF discussed above.

Plural and possessive morphemes were misused most frequently by both the NSs and NNSs in all exams. There was a statistically significant difference between the frequency of plural and possessive morphology errors at both Time One and Two ($p = 0.025$, $df = 4$, power of test = .711). The NSs' morphological errors were less frequent than the NNSs', who improved in Comp. The next most frequent error was with the adverbial morpheme *–ly*. Verbal morphology errors indicating aspect, voice, and mood did not occur in Comp, but tense related morphology was misused as frequently as in SDQ/THQ (0.02%).

Table 3

Plural morphology. The most frequent errors with the plural morpheme – although they improved their individual performance in the loosely timed conditions and between Time One and Two – were made by the speakers of Chinese and the Southeast Asian language, which lack plural morphology and cannot supply a model to follow in the L2. The NNSs who achieved a low EF equal to that of the NSs were Maria, Katia, Hans, and Maya. Their L1s are richly inflected and possess plural morphemes, interfering little with English.

Table 4

Rosa, as a Spanish speaker, is an interesting presence in the top of the ranking. Half of her omissions of the plural morpheme occurred with the nouns *test* and *context*, whose phonological features – the stop coda preceded by /s/ and /ks/ – may camouflage the presence of the plural morpheme and/or might seem odd to a Spanish speaker unaccustomed to such combinations. The other errors seemed to be accidental omissions possibly caused by insufficient working memory.

Possessive morphology. The majority of the errors with possessive morphemes were omissions of ' from plural nouns. The morpheme was also sometimes misplaced,

turning nouns intended as genitive plurals into singular nouns (*learners' – learner's*). The NNSs' rankings in this category were mixed, with speakers of German, Spanish, Chinese, and the Slavic and Southeast Asian languages making most of these errors. These languages use periphrastic ways of constructing genitive forms, although German and the Slavic language represented by Katia also use bound morphemes (noun endings) as genitive markers. The lack of exact mapping of the L1 and L2 possessive morphology can explain some possessive morphology errors, allowing the possibility that those coming from L1s with periphrastic realizations of the genitive may encounter difficulties acquiring a different form. In addition, another confounding factor related to English possessive morphology is that '*s* and the plural –*s* share phonological and orthographic realization. This may cause the possessive marker to lack saliency for both NNSs and NSs, as writers may get confused by the similarities between the two.

Table 5

Syntactic Accuracy

The time afforded by THQ helped most NNSs perform, from a syntactic point of view, more accurately than in SDQ. The time between SDQ/THQ and Comp helped three NNSs perform more accurately, while three stagnated and two regressed slightly (Heidi and Maria). Paired *t* tests showed that neither the decrease in syntactic EF from SDQ to THQ nor the drop from Time One to Two were significant.

Figure 5

The NNSs' syntactic EF was higher than that of the NSs, but, as mentioned, the difference was not statistically significant. In Comp, EF was lower for both groups of writers.

The hierarchy of errors is presented in Table 6. There was a statistically significant difference between the frequency of agreement and anaphoric errors at both Time One and Time Two ($p = 0.025$, $df = 4$, power of test = .711).

Table 6

Agreement. Phara, Mao, Yang, and Lee accumulated the highest agreement EF. Their L1s do not mark agreement in their syntax. Those who performed as well as the NSs – Maya (in all exams), and Heidi, Hans, and Rosa (in THQ) – are NSs of Spanish and German, languages which mark agreement. Maya was the only one who equaled the NSs in all three exams.

Table 7

Agreement errors occurred in specific linguistic contexts listed here from the most to the least frequent:

- syntactic distance between the NP and the V; in this situation, the agreement was often made with the NP closest to the V rather than the subject NP

Example 9: *In addition, the students' language use in and outside immersion classrooms <u>are</u> not as rich as one assumed.* (Phara, Comp)

- with existential *there*

  Example 10: *there <u>are</u> social as well as cultural knowledge; there <u>was</u> different conversational cues; there <u>were</u> miscommunication from time to time* (Mao, THQ)
- after the relative pronoun *which, who,* or *that* placed between the related NP and V

  Example 11: *Though the notion of which feature is marked or unmarked <u>are</u> unclear, it is possible that instruction […] will promote more efficient learning.* (Phara, THQ)
- with collective nouns or nouns perceived as collective (*committee, group, MTV*) or expressions of quantity such as *a number of*
- with uncountable nouns ending in /s/, such as *evidence* or *sociolinguistics*
- with atypical nouns such as *hypothesis/hypotheses, datum/data, schema/schemata*

L1 interference can help explain some of these errors, as languages differ syntactically (as in relative clause placement and syntactic role of relative pronouns or of existential *there*) or semantically (as perceiving noun countability according to the L1 model may result in agreement errors). Full acquisition of such features requires a renegotiation of language specific parameters which has been shown to be possible yet difficult (Flynn, 1996; White, Travis & McLachlan, 1992).

Other processing factors can be associated with the errors above. Thus, Bock and Miller (1991) found in experimental conditions that "the plurality of the local [rather than head] noun phrase had a large and reliable effect on the incidence of agreement errors" (p.45). This explanation extends to agreement errors with collective nouns or nouns perceived as collective, uncountables ending in /s/, and atypical plurals, whose phonetic/orthographic similarity to the plural and atypical character may complicate processing. The present study contradicts Bock and Miller's (1991) finding that syntactic distance does not influence agreement, as the majority of agreement and anaphoric errors (discussed below) occurred where the subject noun and the verb were separated by additional material. Differences in findings may stem from the fact that Bock and Miller's study (1991) involved only English NSs.

Anaphora. The Chinese and Southeast Asian participants accumulated the highest EF with anaphoric references. While the errors made by Heidi and Maya (who had the fewest errors of this type in THQ and Comp) and Maria (who ranked high) consisted of uses of the generic *they* as an anaphor for singular antecedents, the errors encountered in the work of those with higher error densities occurred in several environments, including:

- syntactic distance between the anaphor and its antecedent, sometimes amounting to several sentences. Similar to syntactic distance between NPs and VPs, this seems to pose processing difficulties and make other NPs look like possible antecedents.
- perceived interchangeability of *he/she* and *they*

> Example 12: *... the learner may be given a large amount of examples of an grammar rule in dialogues and other forms of text <u>they</u> read ...* (Yang, SDQ)
> Example 13: *<u>They</u> tend to use more demonstrative gestures and actions to help the listener understand him or her.* (Yang, SDQ)

With respect to the first situation, Badecker and Straub (2002) found in their experimental research with NSs of English that, in the processing of pronominal anaphoric references, all candidate NPs are initially considered and then selected based on syntactic information. However, the findings presented here suggest that ESL learners, who may misidentify the syntactic role of NPs (or other parts of a sentence for that matter), may pick the wrong antecedent or/and coreferent.

The perceived interchangeability of *he/she* and *they*, observed to a lesser extent in the work of the NSs, may be related to the increasingly common use of the impersonal pronoun *they* in both speech and writing (Biber, Johansson, Leech, Conrad & Finegan, 1999, p.316; Wilson, 1993).

Table 8

EF Rates and Participant Background

This section summarizes the most salient patterns in EF and relates them to the participants' experiences as learners of English (length of study, length of stay in an English-speaking country, degree of socialization in the TL, motivation, etc.).

Overall, the NNSs who most often obtained the same (or lower) EF rates as the NSs' group were Maya and Maria, speakers of Spanish as an L1. Maya studied English intensively in her home country starting at 13 years old. She lived in the U.S. for the last seven years, has extensive experience teaching English in her country and in the U.S., and is married to an American. Maria was born in the U.S. in a Spanish-speaking family and community, attended school in the U.S. until she was a teenager (first as an English Language Learner, then phasing out of this status over time), and returned to the U.S. for graduate school. While the performance of Maya, the EFL learner, was more accurate than Maria's from a prescriptive point of view, Maria's errors were identical with those of the NSs (consisting of interference from spoken, informal English or working memory failure).

The NNSs with the highest error rates were Phara, Lee, and Mao, speakers of Asian L1s that differ substantially from English. All three began studying English in their home countries at the age of 12 for about one hour a week until they became English majors in college. They usually had non-native English speaking teachers who relied on the Grammar-Translation method, the Audiolingual method, and only occasionally on communicative techniques. Phara was the least motivated to integrate among NSs. Her studies were funded by her country under the provision that she return upon graduation, which she expressed her eagerness to do. Her belief is that language is acquired through intense private study from books. It is possible that, in addition to her personal beliefs about learning, her self-perceived low proficiency prevented her from interacting with NSs. Mao was the oldest of the three when she began studying in an English-speaking country (34 years old, compared to 32 in Phara's case and 27 in Lee's case).

Summary of Findings

- The NNSs' group lexical, morphological, and syntactic accuracy improved in the loosely timed conditions of the THQ compared to the timed SDQ, and from Time One to Time Two. Lexical accuracy improved significantly from Time One to Time Two; morphological accuracy improved significantly within Time One, from the timed to the loosely timed condition; syntactic accuracy improved between the timing conditions and longitudinally, though not significantly so. Lexical errors were the most frequent for the NNSs, with morphological errors the second most frequent, followed closely by syntactic errors.
- Although the NSs' performance was more accurate, it was not completely error-free. The NSs also improved in lexical, morphological, and syntactic accuracy both within Time One and from Time One to Time Two.
- For the NNSs, the forms most frequently encountered in errors were:
    - Articles (reached statistical significance among lexical EFs)
    - Prepositions
    - Plural morphology (reached statistical significance among morphological EFs)
    - Possessive morphology
    - Agreement (reached statistical significance among syntactic EFs)
    - Anaphora
- Some other errors common to all NNSs, regardless of L1:
    - The collocation *in its own right* realized as *on its own right*
    - The omission of the plural morpheme *–s* from nouns ending in /t/, /st/, /kst/: *test, text, context, concept.*
- Errors common to both NSs and NNSs were:
    - Plural and/or agreement errors with atypical or irregular forms such as *hypothesis/hypotheses, datum/data, schema/schemata*
    - Omissions or misplacements of the possessive morpheme on plural nouns
    - Remote antecedents for anaphors placed over two or more syntactic boundaries
    - Omissions of the adverbial morpheme *–ly* in transitional phrases (*most importantly*)
    - Lack of prescriptive grammatical agreement between an antecedent realized as a singular noun and an anaphor realized as the impersonal pronoun *they.*

Discussion and Conclusions

The NNSs' ranking presented in *Figure 1* and subsequent error analysis suggest a gradation of levels within the concept of "advanced" ESL learner/writer. The following distinct stages exist:

a. a stage we can continue to call **advanced**, at which L2 writers may make a multitude of errors (with forms such as articles, prepositions, conjunctions, verb choice and tense morphology, idioms, and constituent placement and embeddedness) with relatively high frequency;

b. a **highly advanced** stage, at which writers make only the most difficult types of errors (with articles, prepositions, plural and possessive markers, agreement and anaphora) and to a smaller degree;

c. the **near-native** stage, at which the amount of errors decreases even more;

d. the **native-like** stage, at which L2 learners make errors that the NSs make (the only difference being that they have an L1 other than English).

These levels were represented as follows. Phara, who accumulated the most frequent and varied types of errors in the timed and untimed situations in Time One and Two, was advanced in SDQ/THQ (with a normed AEF of 40.15 / C-unit) and became highly advanced in Comp (EF = 18.12). Lee and Mao moved from the highly advanced stage (AEFs of 24.17 and 19.69, respectively) to near-native status (EFs of 10.46 and 7.56) by the time of Comp. Maya, Maria, and Heidi were native-like all along (with AEFs of 2.97, 3.5, and 4.91 in SDQ/THQ and EFs of 0.30, 1.9, and 4.82 in Comp). Katia started out near-native (EF = 9.19) and became native-like (EF = 2.26) in Comp. Other participants (Rosa, Hans, and Mohammed) were near-native throughout. The level cutoffs that emerged are: the native-like level corresponding to an EF between 0 – 5; the near-native matching an EF of 5-10; the highly advanced matching an EF of 15-20; and the advanced level matching EFs above 20. There is a gap between EF values of 10-15, which was not represented by anyone in the present study and therefore cannot be ascribed to any category without data support. Further research on a larger corpus may clarify the nature of this interval. Also, because Phara was the only representative of the advanced stage, it cannot be estimated where above the EF of 20 the level should be cut off and discussion of another proficiency level should begin.

At the near-native and native-like stages, an increasing proportion of incorrect usages can be viewed as mistakes, or occasional slips from standard, conventional use, which result from competing plans (attention to content (Cumming, 1990), memory limitations – especially in timed conditions or when dealing with complex syntactic structures). Errors (stable or systematic parts of one's linguistic system reflecting lack of knowledge, as defined by Corder, 1967 (in Ellis, 1994, p.51) are more likely to be associated with the advanced stage. The latter is characterized by more L1 interference and free variation, which can be present up through the highly advanced stage, though to a smaller extent. At the near-native and native-like levels, L1 interference is minimally present, but interference from other registers of the L2 (such as spoken, informal English) increases.

The analysis showed that, based on patterns of longitudinal improvement, syntactic structures are the most likely to cease posing problems for L2 writers. Morphological errors, which improved the least over time, seem to be the most resistant. On the one hand, lexical acquisition continues to pose challenges because of the open-ended nature of lexico-semantic knowledge. Syntactic rules make up a finite set (Chomsky, 1957, 1965) whose acquisition can reach completion, but lexicon can be acquired throughout life. The open-ended nature of lexical acquisition may have contributed to the dominance of lexical errors. These findings support the "weak morphology – strong syntax" hypothesis forwarded by Newport et al. (1977) and Bardovi-Harlig and Bofman (1989), although the lexicon emerged as the weakest here (cf. Bardovi-Harlig & Bofman (1989)). Like the process and reflection studies reviewed, this study confirms the difficult and lengthy character of lexical acquisition.

Additionally, lexical acquisition, although most improvable over time, is likely to remain difficult and incomplete due to function words. The fact that function words were the most difficult for NNSs while content words were occasionally difficult for NSs point to different language learning processes. It has been shown here and elsewhere (Ellis, 1994) that lexical items that are quite "simple" formally, such as articles and prepositions, can pose long-lasting challenges to L2 learners due to their functional and conceptual complexities related to language-specific ways of linguistically realizing countability, abstractness and definiteness (Master, 1995), and metaphorical nature (Tyler & Evans, 2003).

The one factor that set the stage for the attainment of native-like language use was the participants' L1 and its degree of similarity with English as an L2. The speakers of Asian languages were the least advanced in the pool of participants, while the speakers of Spanish and German were native-like in their performance. Although all NNSs improved in the way they used articles over time, and most improved from SDQ to THQ under loose timing conditions, only speakers of German and Spanish reached an error-free state. The speakers of languages that lack an article system (Chinese and the Southeast Asian and Slavic language) made article errors most frequently, usually by omitting them.

Both positive and negative L1 transfer were manifest among all participants. For example, just as in the article ranking, it was the speakers of Chinese and the Southeast Asian language who made preposition errors most frequently. Moreover, it was the Spanish and German speakers who matched the NSs' performance. All four of these L1s possess prepositions, but the structural similarities between English and Spanish and German may facilitate the acquisition and correct use of English prepositions. There may be more overlap in not only the syntactic placement of prepositions but also in the metaphorical concepts associated with prepositions in English, Spanish, and German. This may be why the predominant preposition error type was substitution, whereas omissions and insertions were less frequent. The implication here is that the NNSs are aware of the syntactic necessity to use a preposition, but the specific prepositions, which are language specific, still escape the NNSs sometimes. The more similar the L1 and L2, the greater the boost a language learner receives.

The conclusions in this study are consistent with Herschensohn's (1999) claims that

> the stages of L2 acquisition according to a constructionist model [are]: the initial stage transfers L1 settings to L2 (Schwartz and Spouse, 1996); the intermediate stage is one of underspecification of morphological features (Eubank, 1996) and progressive acquisition of L2 constructions; the final stage may result in near-native acquisition, with virtually complete syntax but residual indeterminacy due to incomplete mastery of peripheral L2 lexicon and morphology. (p. 7)

Aside from the crucial role of the L1, it has been illustrated above that other explanations for the NNSs' errors include: form complexity (the form's ability to occur in multiple linguistic contexts, necessitating more than the acquisition of the form's semantic meaning – as shown in the case of articles and prepositions); interference from spoken, informal English (as in the use of impersonal *they*); syntactic complexity (best evidenced by agreement and anaphoric errors); and insufficient working memory due to strict timing conditions (of SDQ). The latter two are applicable to the NSs mistakes, too.

Evidence against fossilization comes from observing that some NNSs' ranking changed in Comp compared to SDQ and THQ, in one or more of the error categories. This suggests that SLA is a recursive rather than linear process in which a plateau can be reached, only to be followed by a slight regression, after which progression can start anew.

This study concurs with a good portion of the literature reviewed with respect to articles and lexical choice in general being the areas in which advanced ESL writers are most error prone. However, preposition errors were found more frequently in this study, while errors with tense morphology and embeddedness were not frequent (cf. Hinkel (1997)). This suggests that, as learners outgrow lower levels of proficiency, certain error types disappear and major shifts in EF can occur.

Although all the NNSs obtained scores higher than 500 on their TOEFL and GRE, and higher than 4 on the TWE, they displayed quantitative and qualitative differences in performance. No correlation was found between these scores and the NNSs' accuracy rankings. However, the age of arrival in an English-speaking country and the duration of English studies seem to have helped those with the highest accuracy. Additionally, the lowest motivation coincided with the highest EF for Phara, who self-identified as one who did not seek opportunities to socialize in ESL, preferred solitary study, and did not plan to continue teaching English once back in her home country. The correlation between low motivation/TL socialization and linguistic performance is consistent with the findings of Dörnyei and Durow (2004).

Implications and Further Research

This study presents more rigorous ways of defining key terms such as "advanced learner," "error," and "mistake". It proposes quantitative and qualitative criteria that can be used to label SLA phenomena in conjunction with information that has been unilaterally used in the past (test scores, academic standing, etc.), and it illustrates the vacuousness of the term "fossilization" (Cobb, 2003). In longitudinal studies such as this the participants' non-target forms can be seen cycling in and out or up and down in time (such as in the case of Heidi, whose lexical accuracy was higher in THQ than in Comp, or in the case of Rosa, whose syntactic accuracy was higher in SDQ than in THQ). They can also be seen transitioning into native-like mistakes. This type of evolution illustrates that interlanguage is always dynamic and rarely "fossilized" (Selinker, 1972). Such refinements may support more focused, productive research and theory development.

From a pedagogical standpoint, the study suggests that language teaching for graduate students should continue in order to support SLA (as in Master (1995)). The learners' linguistic awareness can be heightened through comparisons with other texts and self-correction. This strategy has been shown to enhance learners' grammatical accuracy and autonomy in university composition students (Vickers & Ene (2006)). Contrastive rhetoric and English for Academic Purposes courses can educate ESL learners about the differences between academic discourse and informal, non-academic, spoken discourse. Because spoken discourse is more salient in our lives, it may be difficult for an ESL learner to intuit which linguistic features are reserved for academic writing.

The fact that both the NNSs and the NSs performed more accurately in the loosely timed condition and after an amount of time went by between writing tasks suggests that the best ways of evaluating writing involve the use of portfolios. Portfolio assessment has earned substantial credibility because it is "holistic, student centered, performance based, process oriented, integrated, and multidimensional" (Gottlieb, 1995, p.12). Hamp-Lyons and Condon (1999) found that a portfolio "provides richer information about what students can do, and it leaves room for students to show more than the test asks" (p.26). We agree that for nonnative writers, who struggle with timed writing tests that do not show the breadth of their capabilities, portfolios create opportunities to showcase one's abilities. Additionally, "the great advantage of portfolios for assessment is that they can include numerous examples of student writing, produced over time, under a variety of conditions" (White, 1999, p. 149). At the same time, assessors of ESL writing should be trained to weigh the errors and provide adequate feedback and evaluations.

The use of corpus-related techniques to store, annotate, and analyze a large amount of texts facilitates researchers' access to data, speeds up the analysis, and makes the texts available for the creation of pedagogical materials in writing or applied linguistics courses. One can only hope that more ESL writing corpora will be publicly available in the near future.

A larger corpus of texts by more participants would ensure a more solid representation of different linguistic backgrounds, time spans, and writing tasks. Because isolated features such as those analyzed above cannot provide the full picture of the complex processes involved in the production of academic writing, it is necessary to conduct an inquiry into higher level discourse features (cohesion and coherence, argumentation and exposition organization, persuasiveness).

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Referenced Software

MonoConc Pro (Athelstan, 2002)

Appendix
Coding Sheet

Lexical:

- word choice:
    - word choice proper: any lexical item used instead of another that would have conveyed the intended meaning appropriately.
        Example: The number of subjects were *eliminated* to 80.
    - vagueness: vague meaning of a lexical item or use that is inappropriate in academic prose.
        Example: Principles are *things* in someone's Universal Grammar.
    - repetition: a word or its synonym is (re)used although the (re)use does not alter or refine the meaning.
        Examples: Strategies are supposed to reduce *mental (cognitive)* energy.
        The test (questions, instructions etc.) are stored on a disc and students *answer (respond)* on the computer.
    - article selection: an article was used or not, or the inappropriate article was used in a context. Subtypes:
        - (definite/indefinite) article: omission

Example: This is a test that is scored and interpreted with reference to *[the]* scores of other students.

- (definite/indefinite) article: insertion: a definite/indefinite article used instead of the zero article
  Example: The critical period hypothesis (CPH) [was] first proposed by Lenneberg (1967) for *the* L1 acquisition …
- substitution: a definite article substituted for an indefinite article or vice versa
  Example: The teachers would ask *a* learners to perform the task.

Zero article misuse was not coded per se, but it was calculated based on: (1) the (mis)use of definite and indefinite articles, because definite/indefinite article omission instances constitute instances of zero article overuse by substitution, and the errors coded as definite/indefinite article overuse proper are the same as zero article underuse; and (2) on automatic counts of bare nouns.

- preposition selection: the omission, substitution, or inappropriate insertion/overuse of a preposition in a P + N, copula + Adj +P, V + P combinations, or other phrases that should contain a preposition
  - omission: no preposition where there should be one
    Example: …that is what Van Patten and Cadierno are experimenting *[WITH]* in this study.
  - substitution: a preposition used in place of the correct preposition
    Example: It [computer adaptive testing] is designed in such a way that an advanced student would not have to take items *about* the beginning or intermediate level if he/she gets the first two items right.
  - insertion: preposition used where there should be none
    Example: L1 is a tool *with* which we can utilize in SLA.
- particle selection: the omission, substitution, or inappropriate insertion/overuse of a particle part of a phrasal verb, accompanying a verb in the infinitive, or other combinations that should contain a particle
  Example: …whether to encourage them *[TO]* retain L1 or develop L2 …
- any other part of speech selection: the omission, substitution, or redundant use of a part of speech not listed above
  Example: Simplified input is considered to be more *proper* to beginners. (adjective substitution: *proper* instead of *appropriate*)

Morphological:

- verb morphology
  - tense
    Example: Many words that were used in the past *were* no longer used now.
  - aspect
    Example: How the interaction between the interlocutors affects the ongoing conversation and the use of gestures *is* scarcely studied so far.

- noun morphology:
  - number: plural marker omitted
    Example: Computer adaptive testing [is defined as] the use of *computer* and related technology in testing.
  - possessive: possessive marker omitted
    Examples: Furthermore, research needs to be done on *CMCs* effects on specific language skills.
    Particularly the issue of the teacher's effect on *students* language development…
- derivational morphology:
  - adverbial *–ly* omitted or overused:
    Example: MOOs and *continuously* chats (e.g. Blake, 2000) were investigated.

Syntactic:

- word order:
  - single word misplacement
    Example: It tells us how *should we learn* and how well we have learned.
  - phrase or clause misplacement
    Example: The teacher of a class *who is not educated about testing* is not properly prepared to teach.
  - inappropriate insertion of a phrase or clause
    Examples: There were three treatment groups to which two classes were randomly assigned *to each of them.*
    …all subjects took a different version [of the test] each time *without using the same version.*
- fragment or incomplete structure: verbless sentence or truncated parallel structure such as *if …then, not only … but also, either…or, neither…nor* where both members should be used
  Example: In other words, the appropriateness of the language being used.
- topicalization
  Example: For individuals, the acquisition of another language gives them an advantage in education and life generally speaking.
- agreement
  - subject-verb (S-V) agreement
    Example: … the evidence are based on the performance of the subjects …
    - agreement: fronted *wh*- clause
      Example: What separates this first generation of research from the second generation *are* not so much the general findings…
    - agreement with closest N/NP
      Example: The description of the different phases *illustrate* trends rather than absolutes…
    - agreement with mass or uncountable N/NP

Example: The final number of subjects *were* eliminated to 80 after pretest …

- agreement with NP in superordinate clause

Example: In other words, students are mostly expected to gain a passing score on FL tests on *paper* which *consists* of mostly multiple choice question …

- agreement in a there+BE+NP structure

Example: … there *are* social as well as cultural knowledge …

- anaphora
  - remote antecedent:

    Example: First, *the authors*$_i$ assume a psycholinguistic perspective which views adult L2 learners as limited capacity processors of information: "they are limited in what they can attend to at a given point in time and what they can process on the basis of previous knowledge and expectations" (Leow, p.334, 1993). VanPatten's earlier work (1990) suggests that early-stage L2 learners process primarily for meaning when processing input and therefore lexically and syntactically simplified input is considered to be more proper to beginners. Secondly, input processing is an important or critical aspect of SLA. Thirdly, instruction does make a difference and the last one is that grammar is necessary for classroom learning, a position strongly argued against by Krashen.

    Their$_i$ research design is an experimental study involving 129 students from six second-year university-level Spanish classes at the University of Illinois.
  - incorrect antecedent

    Example: Testing is not just about L2ers' language knowledge, but *they* are expected to demonstrate their ability to use the TL appropriately and effectively in a certain context.
  - no antecedent

    Example: Discrete-point testing focuses on specific areas, skills or subject such as listening vs. speaking, or present perfect tense use, or preposition and it is especially effective for diagnosis purpose or achievement test if a course is mainly training listening for example. A discrete- point test on listening only might use exercises such as MC to avoid involving other aspects such as writing so that test results would show *their* listening ability only, without having writing involved.
  - antecedent-anaphor agreement

    Example: Of course, communication is most important in SLA not *forms*$_i$. But *it*$_i$ is not to be neglected for mistakes can result in miscommunication.